

TITLE: ATOMIC LAYER DEPOSITION OF METAL OXIDE AND/OR LOW ASYMMETRICAL
TUNNEL BARRIER INTERPOLY INSULATORS

INVENTORS NAME: Jerome M. Eldridge et al.

DOCKET NO.: 1303.045US1

1/16

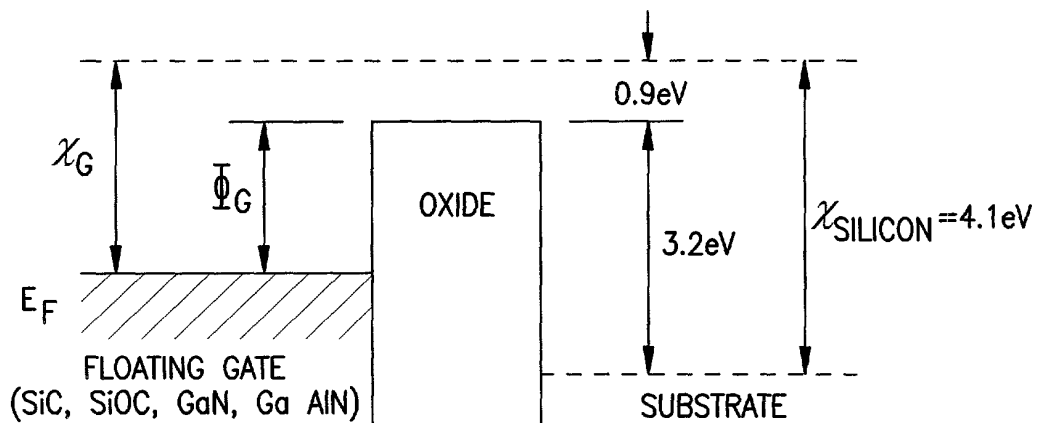


FIG. 1A
(PRIOR ART)

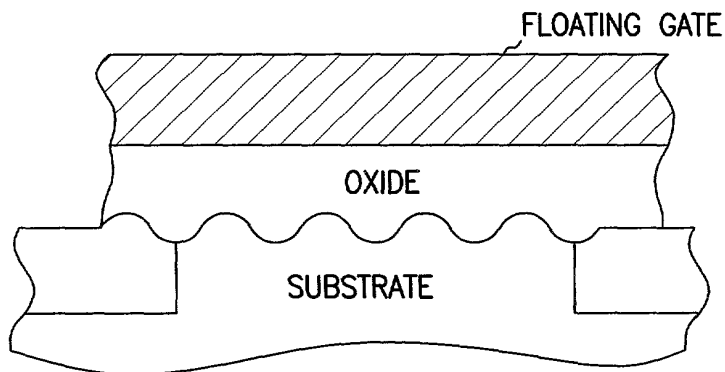


FIG. 1B
(PRIOR ART)

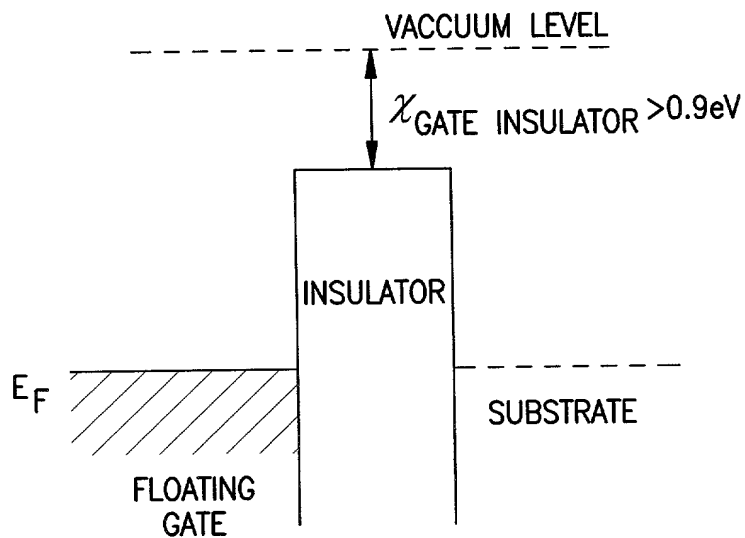


FIG. 1C
(PRIOR ART)

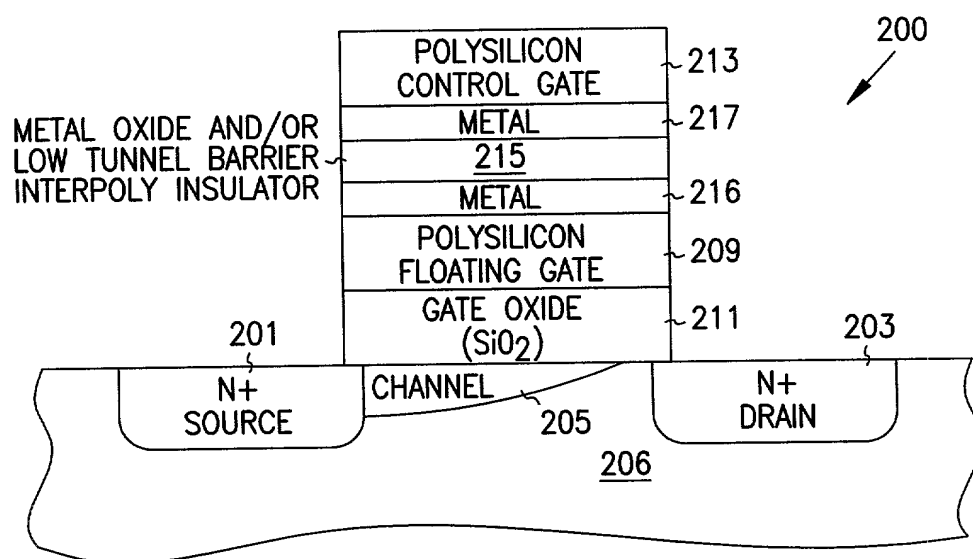


FIG. 2

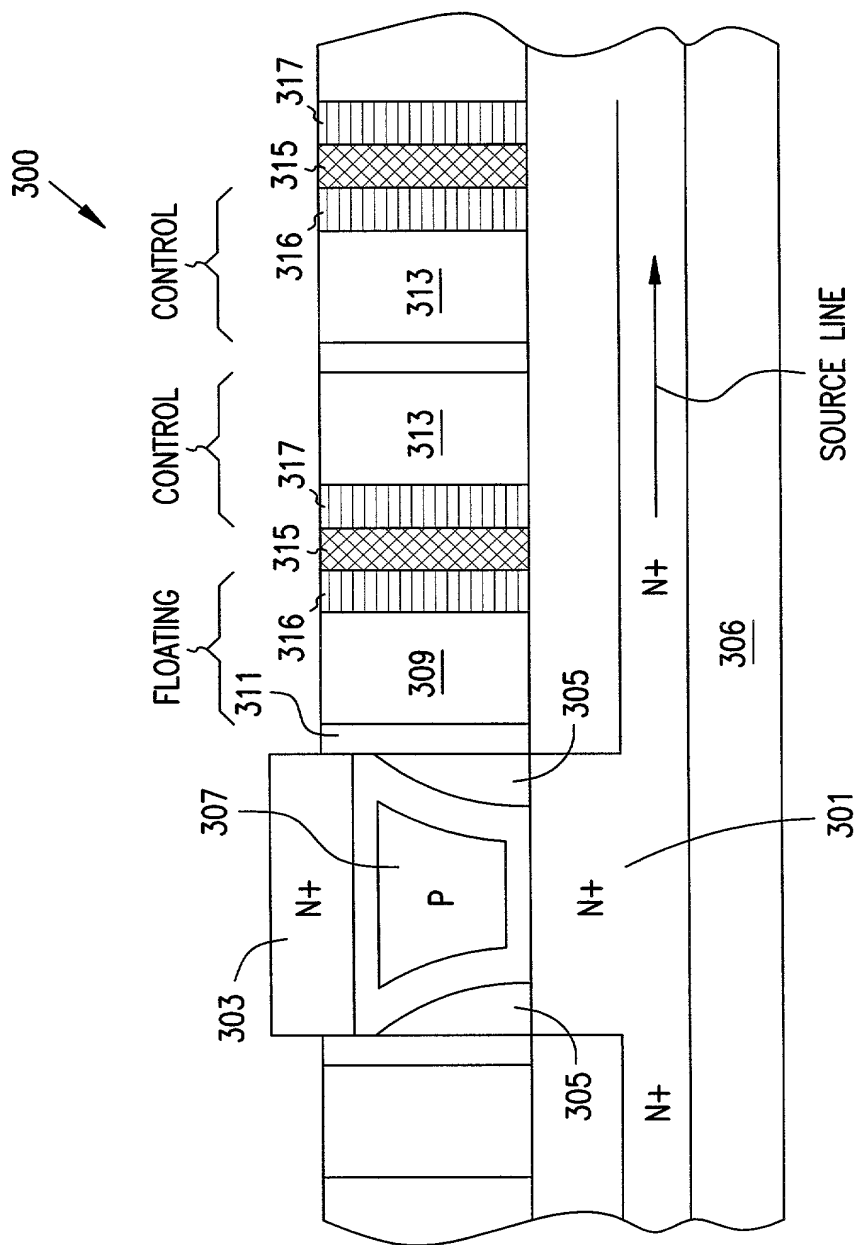
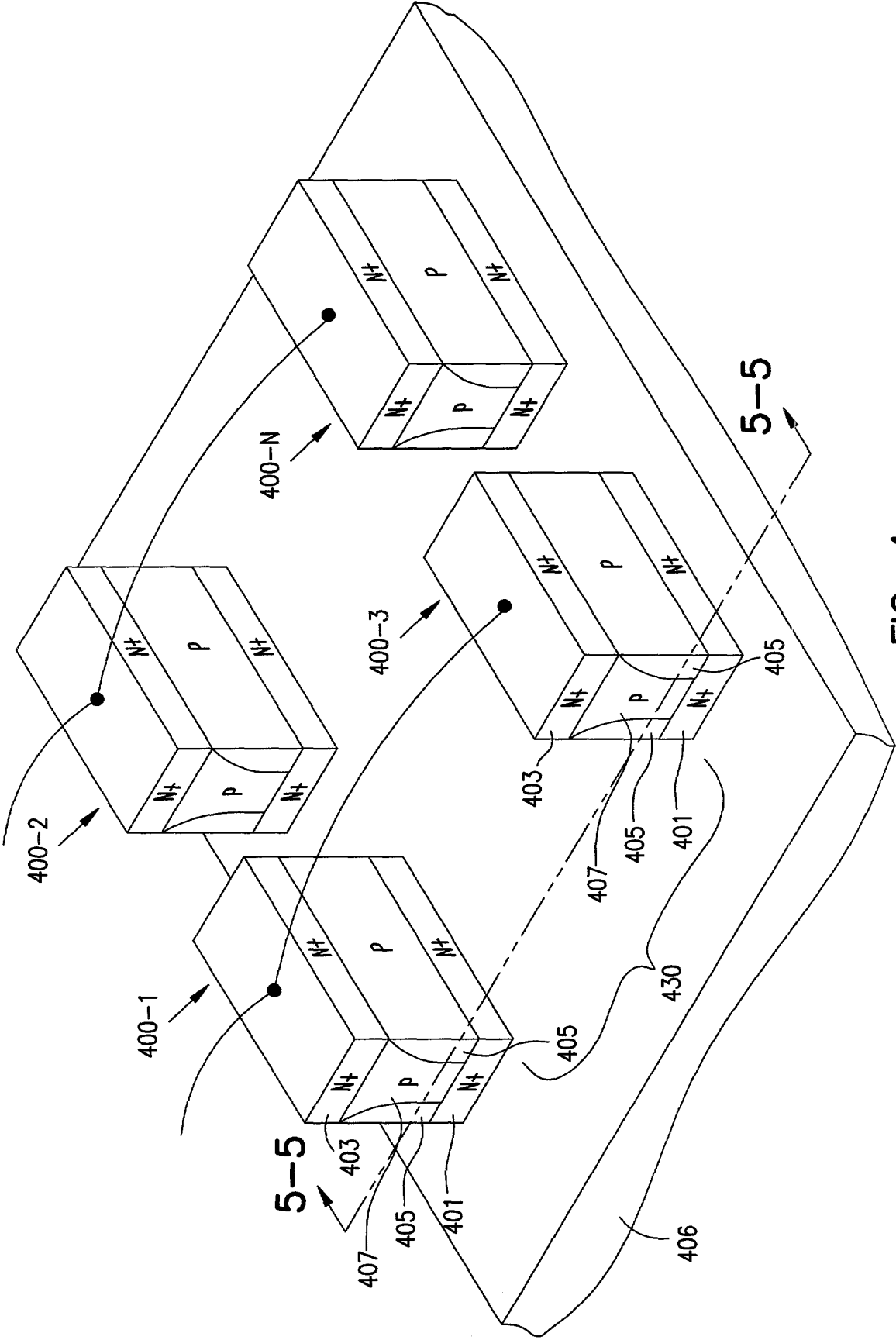


FIG. 3



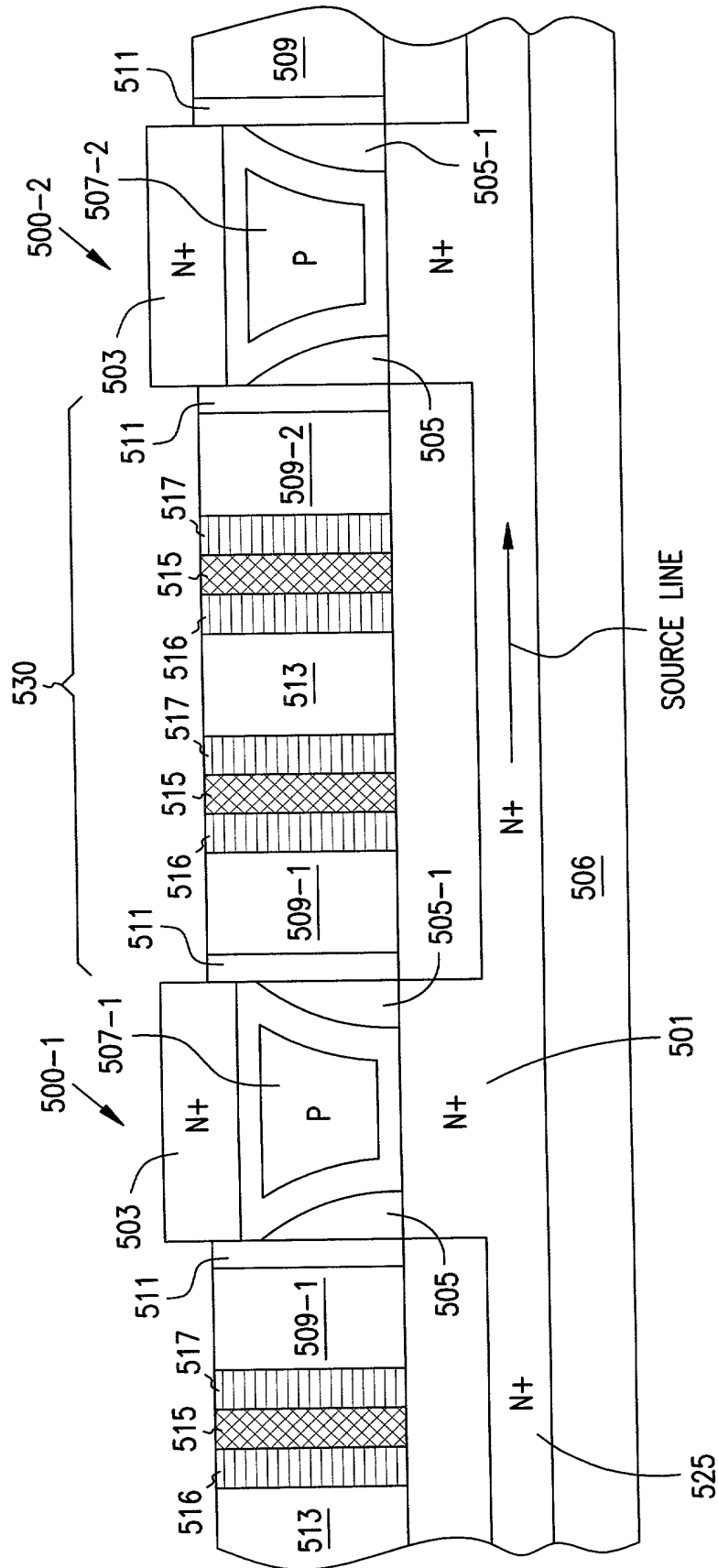


FIG. 5A

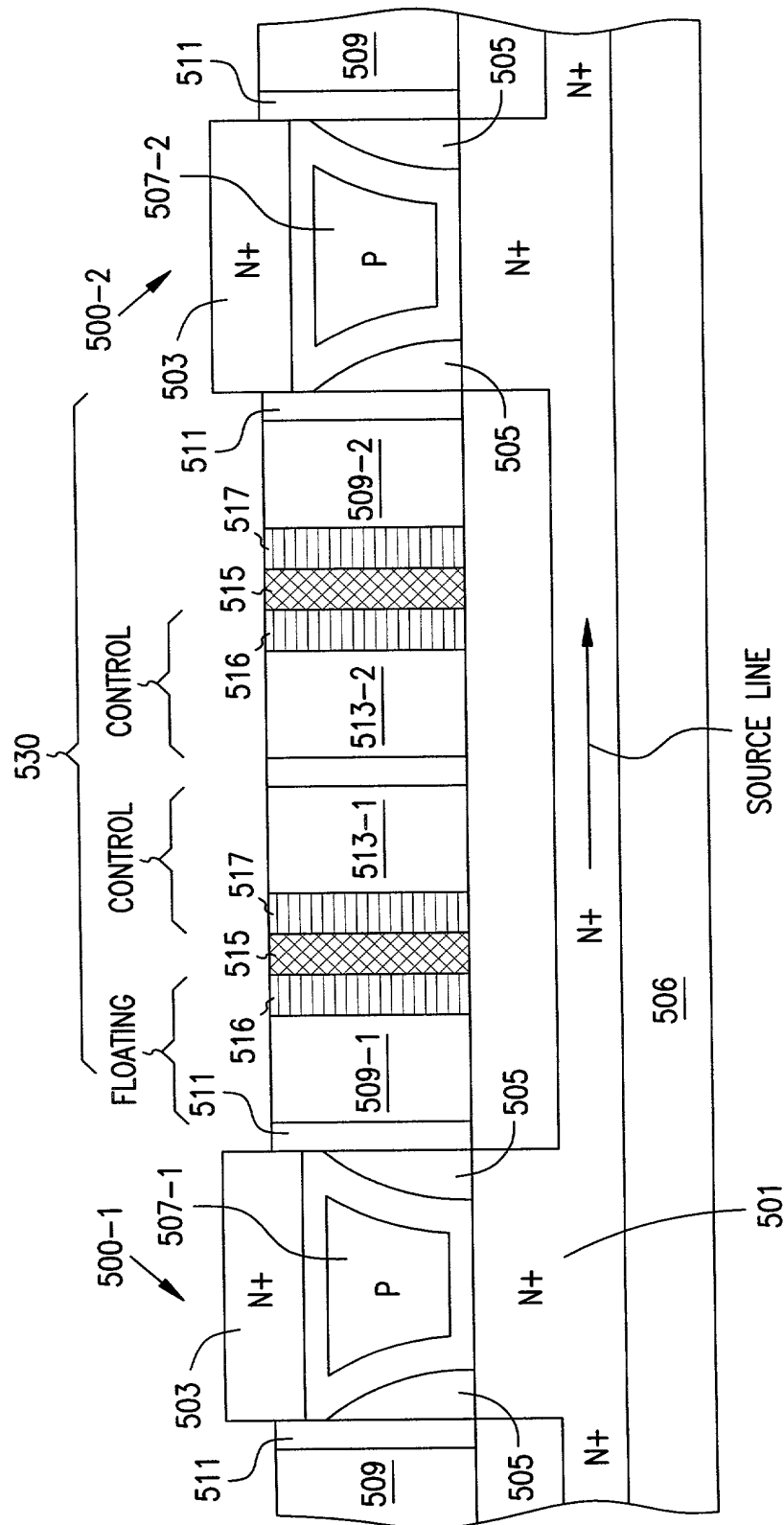


FIG. 5B

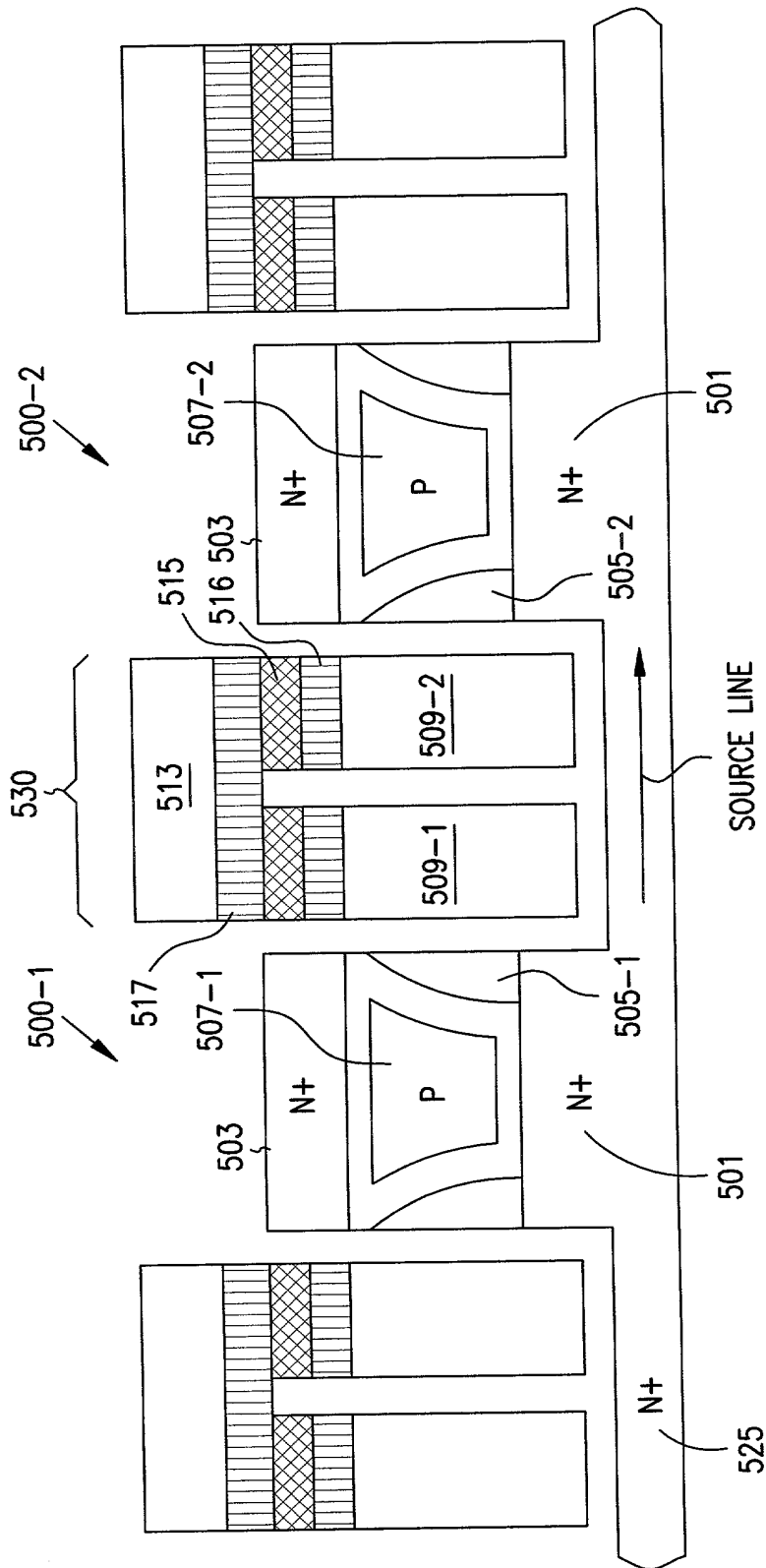


FIG. 5C

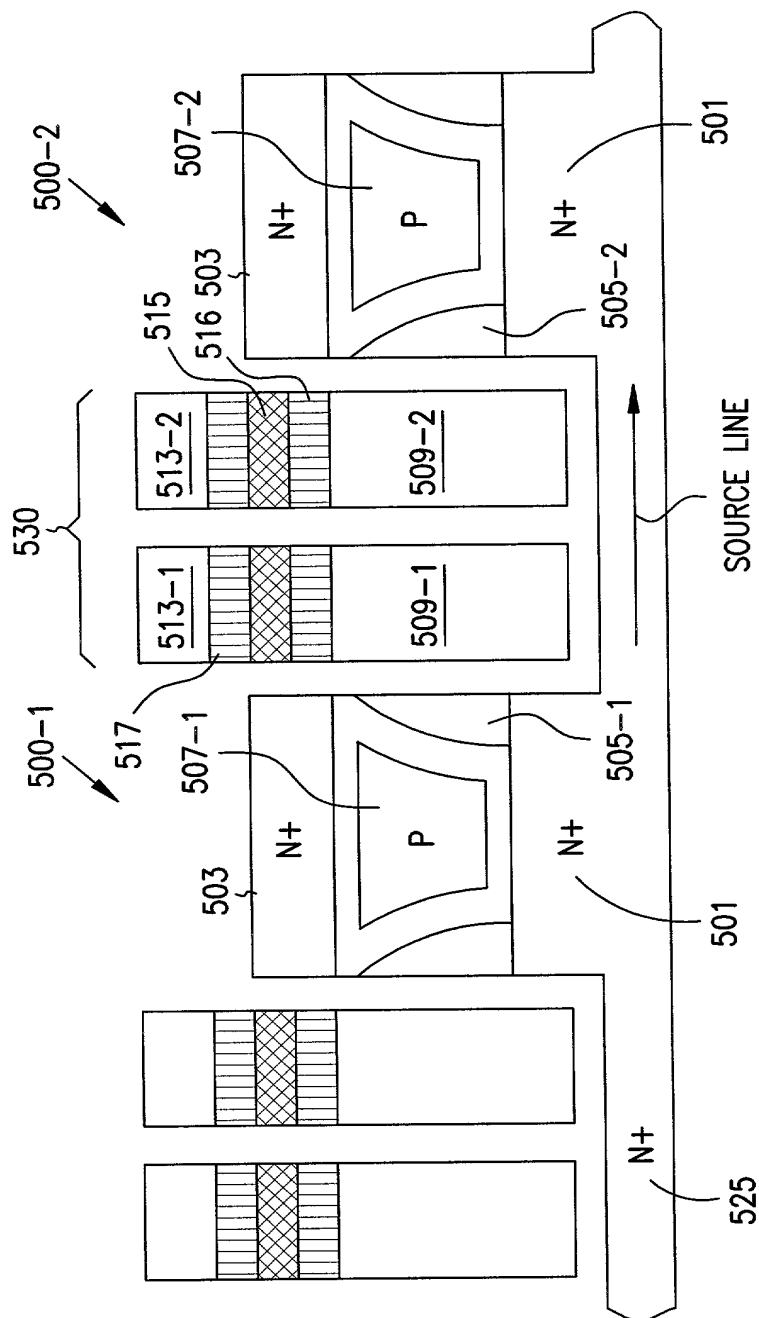


FIG. 5D

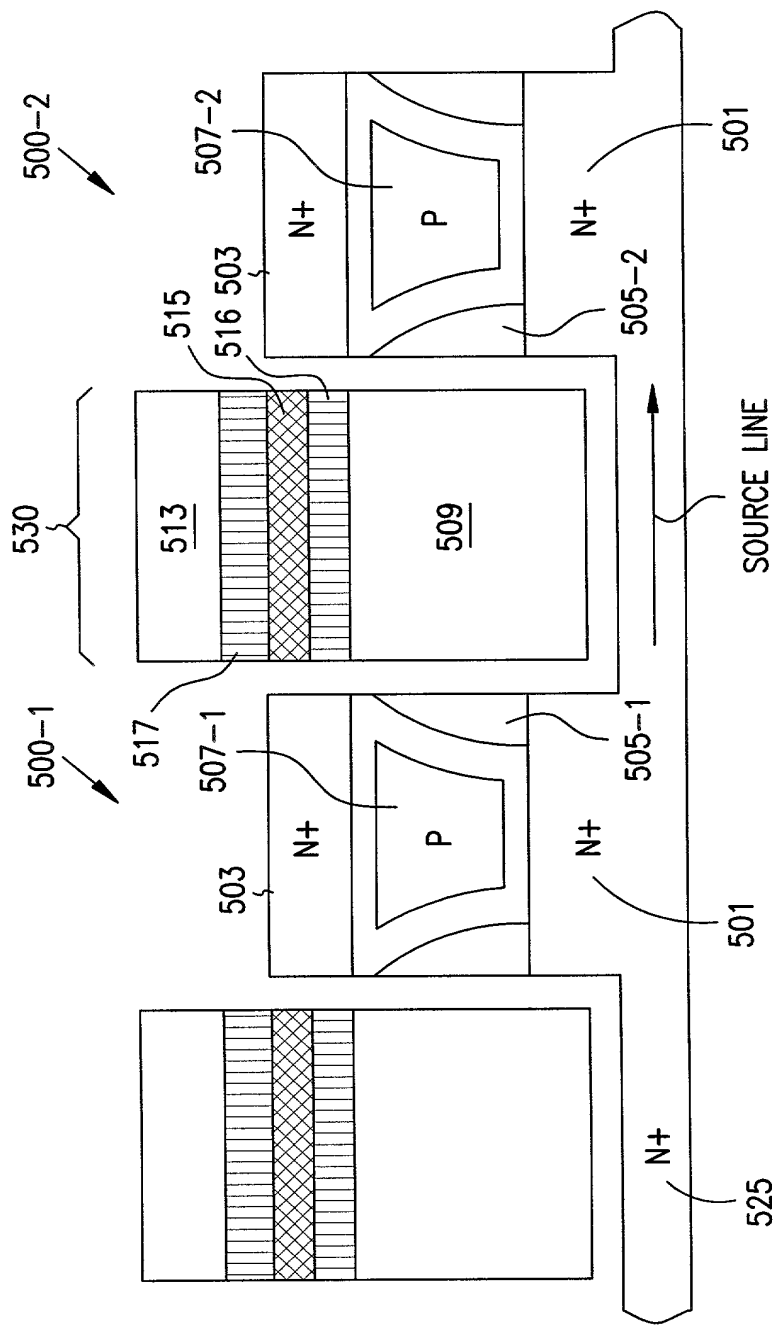


FIG. 5E

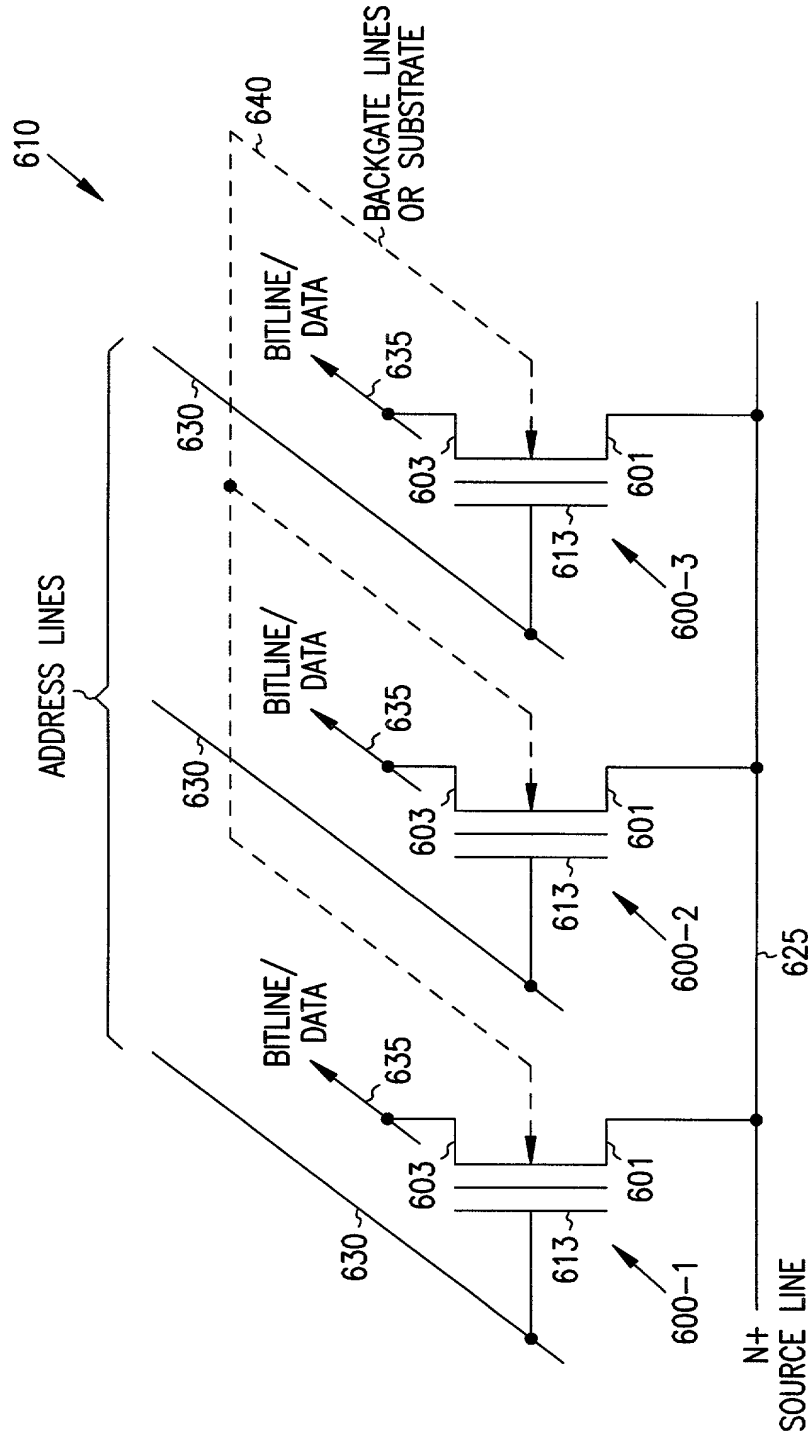


FIG. 6A

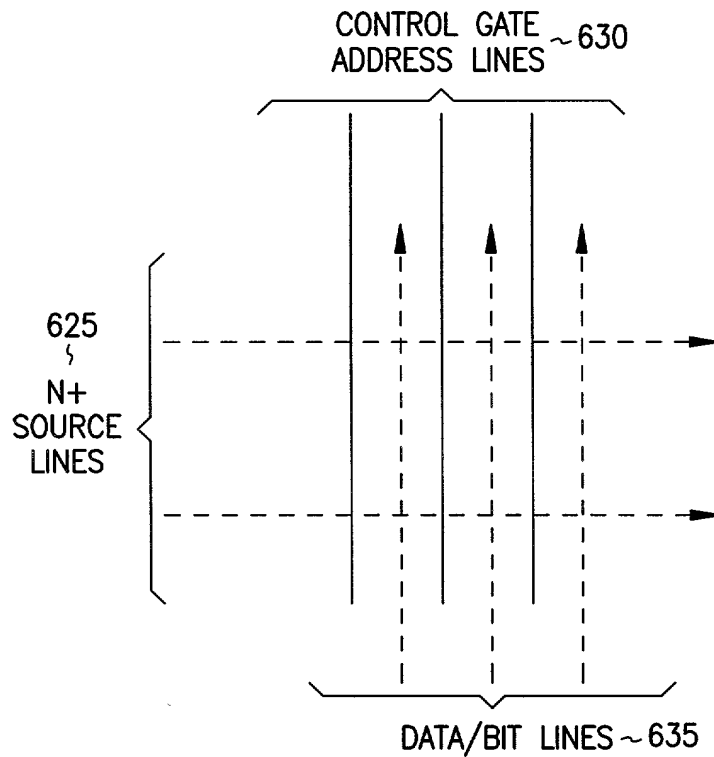


FIG. 6B

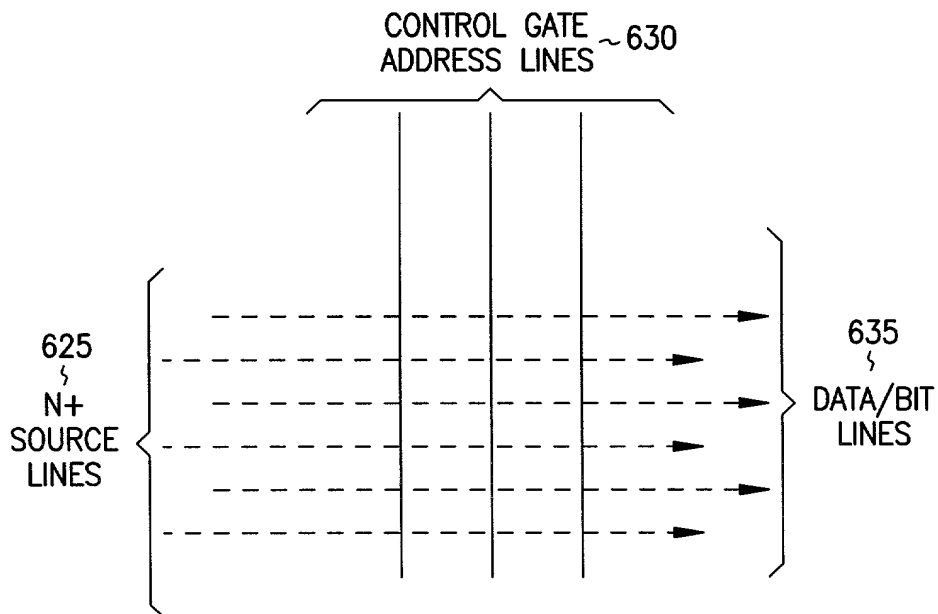


FIG. 6C

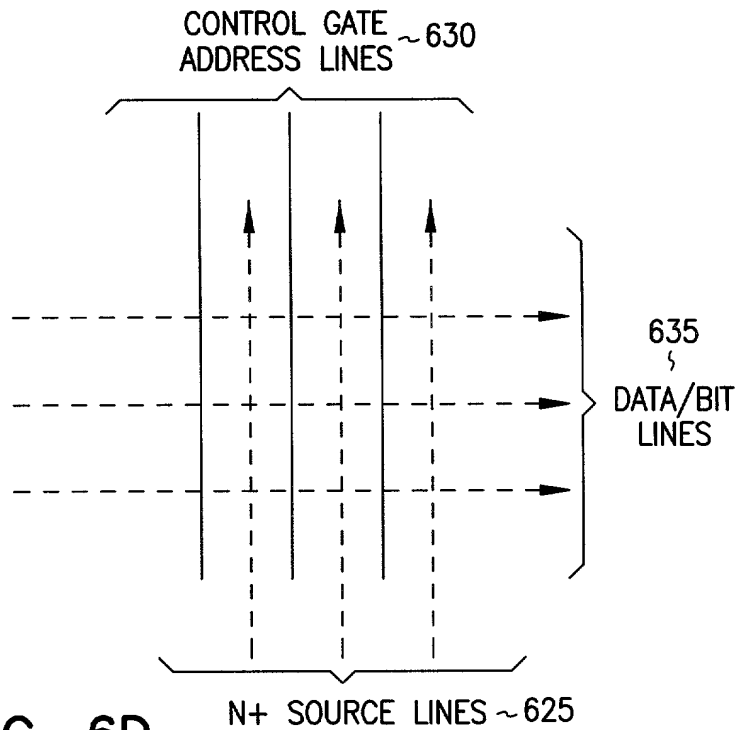


FIG. 6D

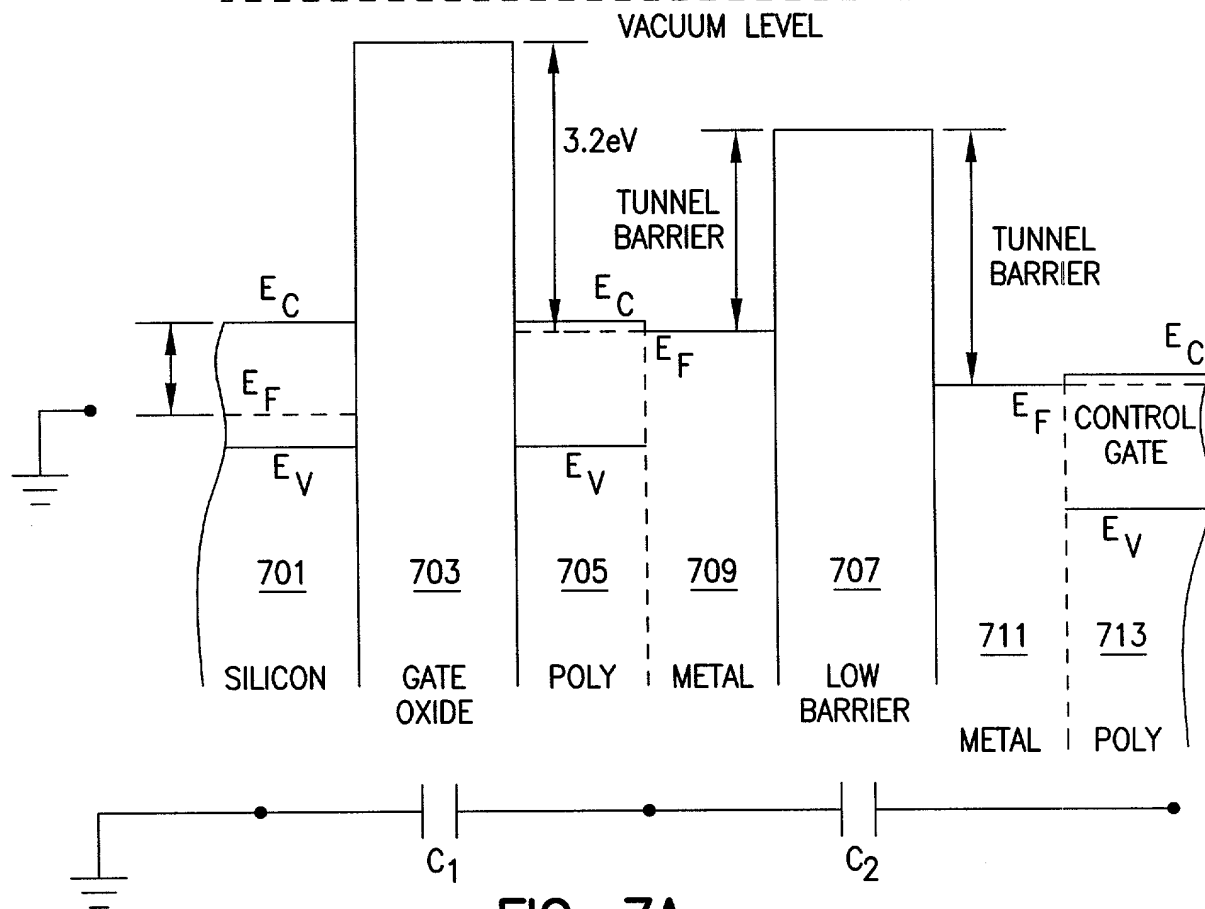


FIG. 7A

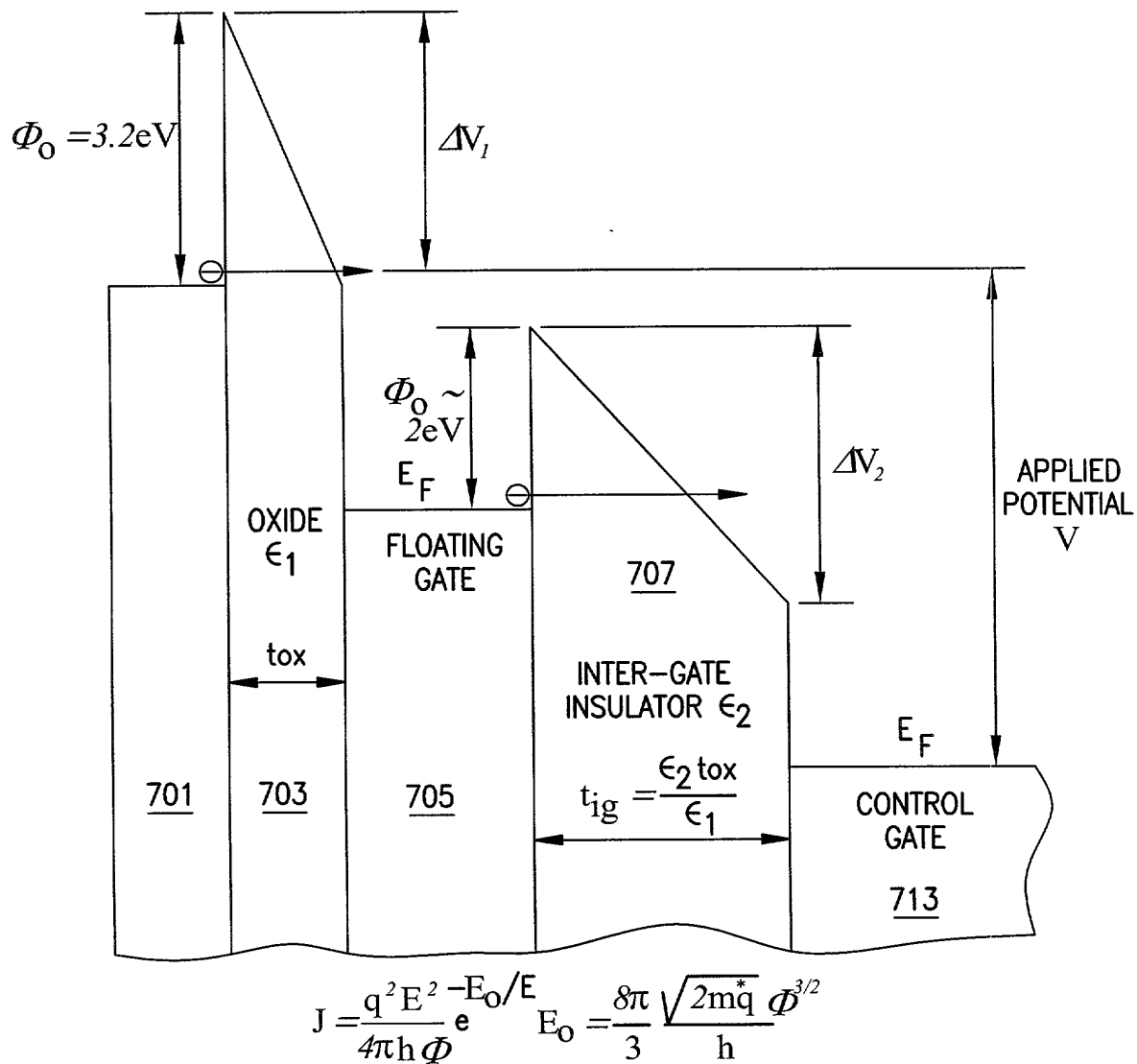


FIG. 7B

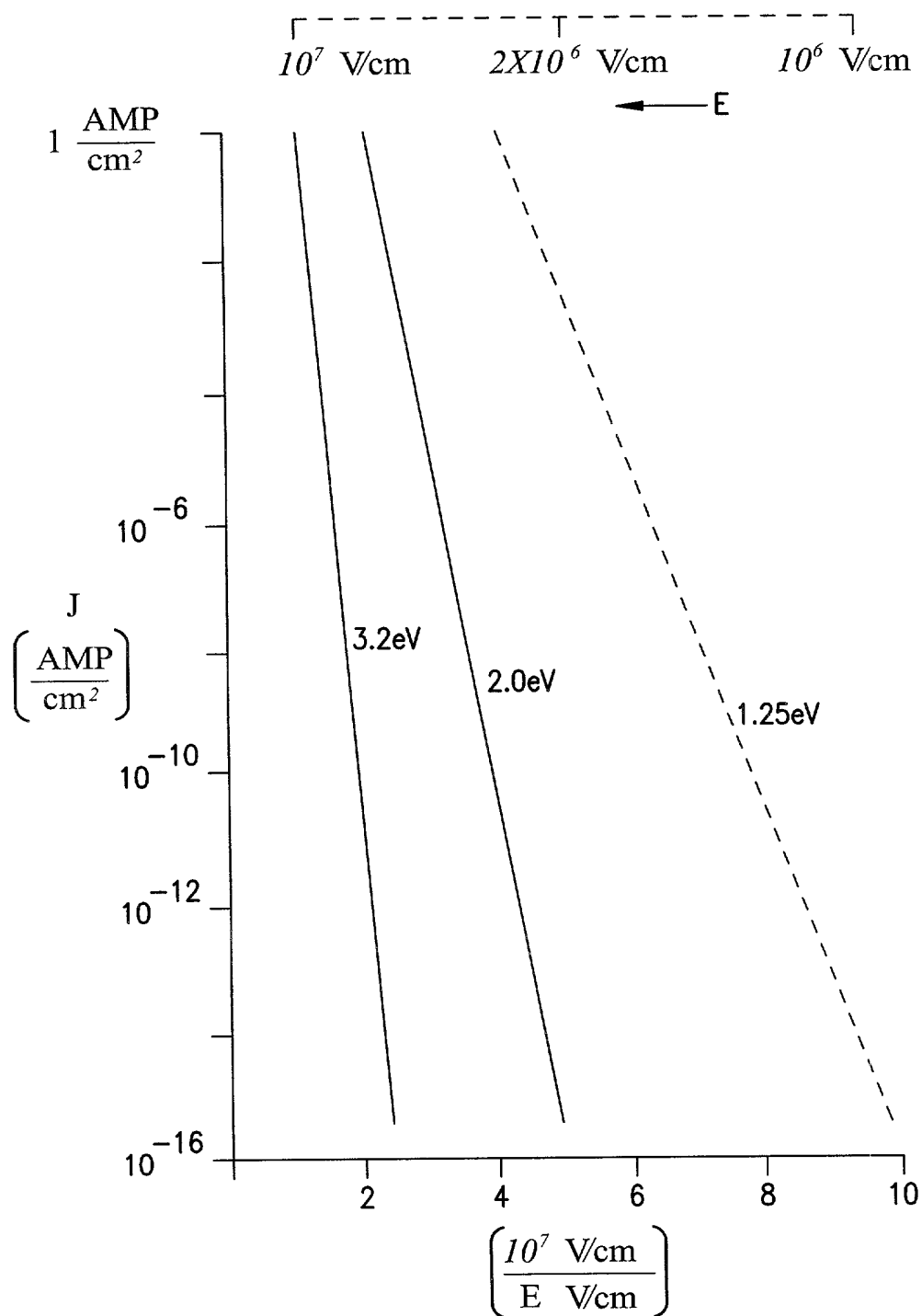


FIG. 7C

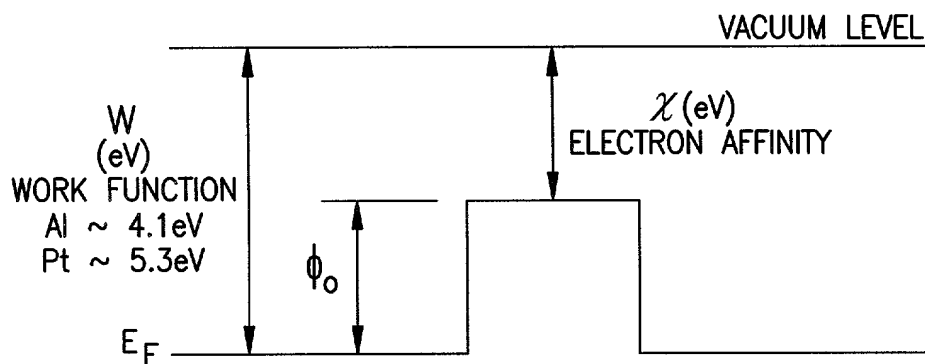


FIG. 8

	E_G	ϵ_r	ϵ_∞	χ	ϕ_0 (Pt)	ϕ_0 (Al)
<u>Conventional Insulators</u>						
SiO ₂	~ 8 eV	4	2.25	0.9 eV		3.2 eV
Si ₃ N ₄	~ 5 eV	7.5	3.8			2.4 eV
<u>Metal Oxides</u>						
Al ₂ O ₃	7.6 eV	9 to 11	3.4			~ 2 eV
NiO						
<u>Transition Metal Oxides</u>						
Ta ₂ O ₅	4.65 - 4.85		4.8	3.3	2.0	0.8 eV
TiO ₂	6.8	30 80	7.8	3.9	est. 1.2 eV	
ZrO ₂	5 - 7.8	18.5 25	4.8	2.5		1.4
Nb ₂ O ₅	3.1	35-50				
Y ₂ O ₃	6		4.4			2.3
Gd ₂ O ₃						
<u>Perovskite Oxides</u>						
SrBi ₂ Ta ₂ O ₃	4.1		5.3	3.3	2.0	0.8 eV
SrTiO ₃	3.3		6.1	3.9	1.4	0.2 eV
PbTiO ₃	3.4		6.25	3.5	1.8	0.6 eV
PbZrO ₃	3.7		4.8		est. 1.4 eV	0.2 eV

FIG. 9

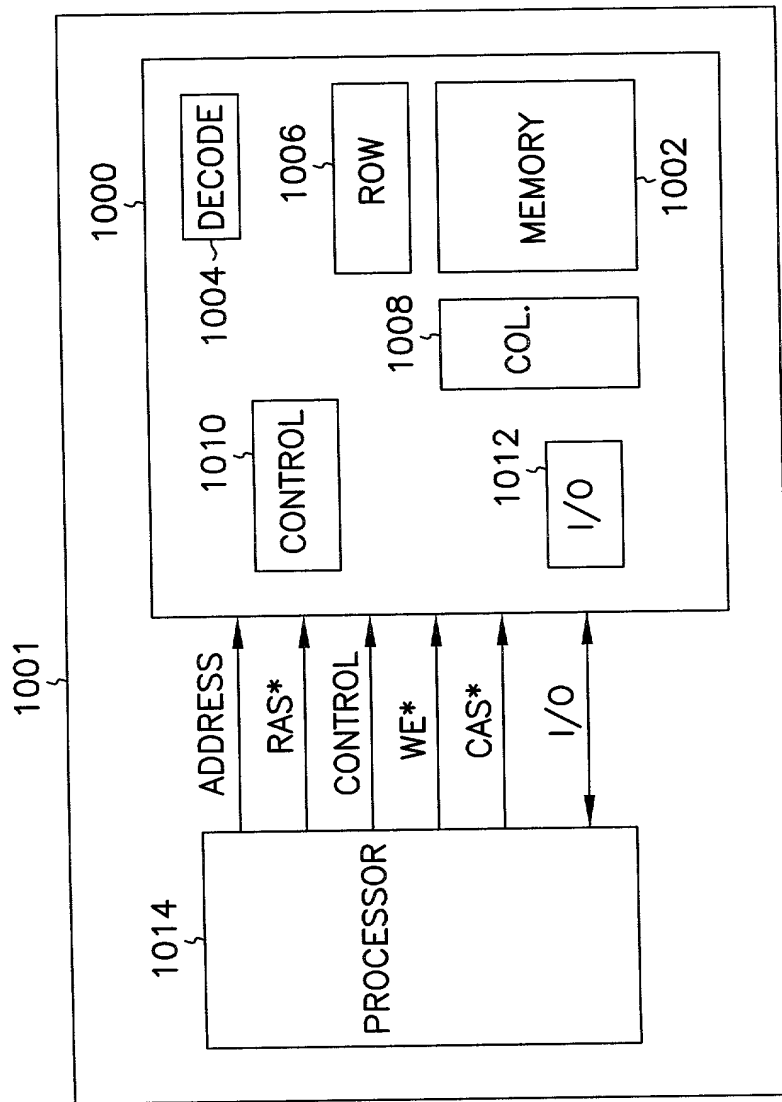


FIG. 10